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10/767,778	01/30/2004	Yoshiko Yasuda	NTT.0180	5694

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EXAMINER
JAMI, HARES

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 June 2008</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,22 and 23* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19 and 22-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☒ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This is in response to Request for Continued Examination (RCE) filed on 06/30/2008.

Claims 1-19 and 22-23 are pending in this Office Action.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/30/2008 has been entered.

Response to Amendment

Claims 1-2, 4-5, 9, and 12 have been amended, claims 21-22 had been previously cancelled, and no new claim has been added.

The Applicant's amendment regarding claim objection has been accepted by the Examiner. Therefore, prior claim objections have been withdrawn.

Applicant's arguments with respect to claims 1, 4, 9, and 12 have been considered but are moot in view of the new ground(s) of rejection.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35

U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. JP 2003-

021301, filed on 30 January 2003.

35 U.S.C. 119(b) (3) states that "*The Director may require a certified copy of the*

original foreign application, specification, and drawings upon which it is based, a

translation if not in the English language, and such other information as the Director

considers necessary. Any such certification shall be made by the foreign intellectual

property authority in which the foreign application was filed and show the date of the

application and of the filing of the specification and other papers". See MPEP 35 USC

119 (b)(3).

If the Applicant desire to obtain the benefit of foreign priority under 35 U.S.C.

119(a)-(d) prior, the Applicant needs to submit an English translation of original

application in response to this Action.

Failure to provide a certified translation may result in no benefit being accorded

for the non-English application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-4, 6, 8-12, 14, 16-17, 19, and 22-23 are rejected under 35 U.S.C.

103(a) as being unpatentable over Dan et al., US Patent No. 6,223,206 B1 issued on

Apr. 24, 2001 ('Dan', hereafter) in view of Sakurai, US Patent No. 5,093,779 issued on

Mar. 3, 1992, further in view of McBrearty et al., US Publication No. 2002/0133681 A1

published on Sep. 19, 2002 ('McBrearty', hereafter), and further in view of Pitts, US

Patent No. 6,205,475 B1 issued on Mar. 20, 2001.

Regarding claim 1,

Dan discloses **a file replication method for creating, in a distributed file

system including a plurality of network storage apparatus and a replication

system each connected to a network** (See Fig. 1, Dan) **wherein the replication

system has a management table for managing attribute information of all files and

all directories in the network storage apparatus as a replication source** (See Fig. 6

and corresponding text, Dan), **a partial copy of data stored in the network storage

apparatus as the replication source in the network storage apparatus as a

replication destination** (See Fig 1 and col. 2, line 58 through col. 3, lines 45, Dan);

Judging whether or not a replicating operation should be performed with execution of said file access request by using said management table and said replication information (Dan discloses upon execution of file accessing operation, the system checks the disk load threshold to make a "replication decision" to whether replicate a portion of file to another disk storage or not, Dan further discloses using file management information, see Fig. 3A, col. 9, lines 7-40, and Fig. 6, Dan)

collecting from said first network storage apparatus and from said second network storage apparatus responses to the file access request and making the collected responses into one response; and sending one response to the client (Dan discloses that in responding to the client's access request, first portion of file is collected from the first storage and upon reaching to a "switch point", the next portion of file is collected from replica or second storage device, then the response is presented to the client as one, see col. 5, line 58 through col. 6, line 26, Dan).

Furthermore, Dan discloses preliminarily recording replication information for specifying a file as a target of replication in the replication system (Dan discloses recording the file ID and switch points as preliminarily recording replication information (see Fig. 6 and corresponding text, Dan).

Dan discloses all the limitations as stated above. Dan further discloses a table for managing the attributes of replicas (i.e., files) stored on a network storage apparatus (See Fig. 6, Dan). However, Dan does not clearly disclose **managing attribute information of all files and all directories the storage apparatus**. On the other hand, Sakurai discloses a computer file system, which is from the same field of endeavor of

file access and file managing (See col. 1, lines 30 et seq., Sakurai). Sakurai discloses a

"file management table" containing the attribute information of all files and directories of

a file system (See Fig. 1-5, col. 1, line 35 et seq. and col. 2, lines 47 et seq., Sakurai).

Therefore, it would have been obvious to one of ordinary skill in the art at time the

invention was made to modify the teachings of Saito with Sakurai's system. A skilled

artisan would have been motivated to incorporate the "file management table"

containing the attribute information of all files and directories of a file system, as taught

by Sakurai (See Fig. 1-5, col. 1, line 35 et seq. and col. 2, lines 47 et seq., Sakurai) into

the teachings of Dan in order to include a file management table for managing attribute

information of all files and all directories of the network storage as a replication source.

The motivation for doing so would have been that a file management table facilitates

locating files and directories and shows relationship between directories and files and

their attributes on a computer system.

The combination of Dan in view of Sakurai discloses all the limitations as stated

above. It further discloses judging whether or not to perform replication and file

information table (see Fig. 3A, and Fig. 6, Dan). However, it does not clearly disclose

that **preliminarily recording information indicating whether or not each of the file

and the directories stored in said first network storage apparatus is an object to

be copied in said replication system**. On the other hand, McBrearty discloses a

method of automatically generating and disbanding data mirrors according to workload

conditions, which is from the same field of endeavor of data replicating (See [0009],

McBrearty). McBrearty discloses "usage statistics" regarding the storage apparatus

which is preliminarily collected by the system and is used for replication purpose,

corresponds to the limitation of "preliminarily recording replication information"; the

usage statistics (i.e., preliminarily recording replication information) is used to indicate to

whether or not the volumes (which contain files and directories) should be mirrored (i.e.,

replicated) by the system (See [0009], Fig. 7, and [0037]-[0039], McBrearty). McBrearty

further discloses judging by making decision that whether or not mirroring (i.e.,

replication) operation would be performed or not using the storage information (See

[0009], McBrearty). McBrearty judges performing the replication by using the collected

usage statistics of a volume to determine if the usage exceeds a threshold, and if it

exceeds, then the replication is performed (See [0037]-[0039], McBrearty). Therefore, it

would have been obvious at the time the invention was made to further modify the

teachings of the combination of Dan in view of Sakurai with McBrearty's system. A

skilled artisan would have been motivated to incorporate the techniques of including

"usage statistics" (i.e., preliminarily recording replication information) indicating whether

or not to replicate a volume (which contains directories and files) and using judging

whether or not a mirroring (i.e., replication) is performed or not, as taught by McBrearty

(See [0009], Fig. 7, and [0037]-[0039], McBrearty) into the method step of teachings of

the combination of Dan in view of Sakurai in order to include preliminarily recording

information (i.e., "usage statistics") indicating whether or not each of the file and the

directories stored in said first network storage apparatus is an object to be copied in

said replication system and judge whether or not a replicating operation should be

performed with execution of the file access request by using the management table and

the replication information. The motivation for doing so would have been to increase the efficiency of the system by reducing the overhead of replicating unnecessary data corresponding to the access request.

The combination of Dan in view of Sakurai and further in view of McBrearty teaches all the limitation as stated above. However, it does not clearly disclose **simultaneously transferring, if a result of said judgment is such that the replicating operation should be performed, said file access request to said network storage apparatus as the replication source and to said network storage apparatus as the replication destination**. On the other hand, Pitts discloses a request interceptor in network nodes for determining local storage of file image satisfying predetermined criteria, which is form the same filed of endeavor of replicating (i.e., imaging) of data over network (See col. 6, lines 19-54, Pitts). Pitts discloses that the system simultaneously transfers the data access request to multiple storages having the same dataset, which are replica of each other (See col. 23, lines 59-67, Pitts). Therefore, it would have been obvious at the time the invention was made to further modify the teachings of the combination of Dan in view of Sakurai and further in view of McBrearty with Pitts's system. A skilled artisan would have been motivated to incorporate the technique of simultaneously transferring the data access request to multiple storages having the same dataset, which are replica of each other, as taught by Pitts (See col. 23, lines 59-67, Pitts) into the teachings of the combination of Dan in view of Sakurai and further in view of McBrearty in order to simultaneously transferring, if a result of said judgment is such that the replicating operation should be performed, the

file access request to a network storage apparatus as the replication source and to the

network storage apparatus as the replication destination. The motivation for doing so

would have been to increase the speed of the system by accessing the closer network

storage having the same data, which results in reducing the amount time accessing the

data.

Regarding claim 3,

the combination of Saito in view of Sakurai further in view of McBrearty and

further in view of Pitts discloses wherein the judgment is performed in said judgment

step that the replicating operation should be performed under a condition that the

received file access request is a write request (Dan discloses that replication is

performed based on the condition of received access request [see col. 9, lines 6-40,

Dan] and McBrearty discloses that the access request could be a write request [see

[0021], McBrearty] , which corresponds to the limitation of wherein the judgment is

performed in said judgment step that the replicating operation should be performed

under a condition that the received file access request is a write request).

Regarding claims 4 and 6,

the scopes of claims 4 and 6 are substantially the same as claims 1 and 3,

respectively. Therefore, claims 4 and 6 are rejected on the same basis as set forth for

the rejections of claims 1 and 3, respectively.

Regarding claim 8,

the combination of Dan in view of Sakurai further in view of McBrearty and further

in view of Pitts discloses wherein said replication information is at least one rule

indicating that a file having a specified user or group identifier, a file belonging to a

specified directory, or a file having a specified file identifier as an object to be copied as

preliminarily recorded (See Dan: Fig. 6, File ID).

Regarding claims 9-10,

the scopes of claims 9-10 are substantially the same as claims 1 and 3,

respectively. Moreover, Pitt discloses an NFS file system as a virtualized-and-unified file

system (See col. 9, line 54-59, Pitt). Therefore, claims 9-10 are rejected on the same

basis as set forth for the rejections of claims 1 and 3, respectively.

Regarding claim 11,

the combination of Dan in view of Sakurai further in view of McBrearty, and

further in view of Pitts discloses collecting a response to the file access request from

said network storage device storing therein said file and a response to the file access

request from said network storage as the replication destination and returning the

collected responses as one response to said client (Dan discloses that in responding to

the client's access request, first portion of file is collected from the first storage and upon

reaching to a "switch point", the next portion of file is collected from replica or second

storage device, then the response is presented to the client as one, see col. 5, line 58

through col. 6, line 26, Dan).

Regarding claims 12, 14, and 17,

the scopes of claims 12, 14 and 17 are substantially the same as claims 9, 11,

and 8, respectively. Moreover, Sakurai teaches the limitation of management directory

for managing a structure of all files and directories (See Fig. 2-5 and corresponding text,

Saito). Also, McBrearty discloses a mapping table (i.e., unit) for network storages (See

[0023], McBrearty). Furthermore, Pitts discloses the limitation of external file system by

disclosing that the network may support different types of file system (See col. 12, lines

46-57, Pitts). Therefore, claims 12, 14, and 17 are rejected on the same basis as set

forth for the rejections of claims 9, 11, and 8, respectively.

Regarding claim 16,

the combination of Dan in view of Sakurai further in view of McBrearty and further

in view of Pitts discloses wherein said judgment unit judges that replication should not

be performed if the file access request is a read request and the file access request is

not transferred to the external file system as the replication destination (McBrearty

discloses that the access request could be a read request [see [0021], McBrearty],

which does not change the contents of a file; and also McBrearty discloses judging

whether replication is performed or not [see [0009], McBrearty], which corresponds to

the limitation of wherein said judgment unit judges that replication should not be

performed if the file access request is a read request and the file access request is not

transferred to the external file system as the replication destination).

Regarding claim 19,

the combination of Dan in view of Sakurai further in view of McBrearty and further

in view of Pitts discloses wherein said replication information includes not only the rule

but also information for identifying the virtualized-and-unified file system to which the

rule is applied (Dan discloses identifying files by their file ID [see Fig. 6, Dan], also Pitts

discloses identifying a file system by the "file system ID) in a network [see col. 10, lines

12-17, Pitts], which corresponds to the limitation of wherein said replication information includes not only the rule but also information for identifying the virtualized-and-unified file system to which the rule is applied).

Regarding claim 22,

the combination of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts discloses capacity management unit for periodically acquiring respective disk capacities and amounts of disk use of said virtualized-and-unified file system and said external file system as the replication destination and determining, from said disk capacities and amounts of disk use, a disk capacity and an amount of disk use which allow for replication (McBrearty implicitly discloses the limitation of capacity management unit by disclosing that a the system calculates the volume of storages and automatically mirror data to unused storage space on volume to create a mirrored section of data, see [0023]-[0024], McBrearty).

Regarding claim 23,

the combination of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts discloses wherein said replication indicates whether or not each of the files and the directories stored in said first network storage apparatus storage is an object to be copied, was preliminarily set by an administrator and then recorded in said replication system (McBrearty discloses that a system administrator decides which piece of data is to be mirrored and McBrearty further discloses judging whether or not to perform replication of data, see [0008] and [0009], McBrearty).

Claims 2, 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Dan et al., US Patent No. 6,223,206 B1 in view of Sakurai, US Patent No.

5,093,779, further in view of McBrearty et al., US Publication No. 2002/0133681 A1,

further in view of Pitts, US Patent No. 6,205,475 B1 issued on Mar. 20, 2001, and

further in view of DeKoning, US Patent No. 6,691,254 B1 issued on Feb. 10, 2004.

The combination of Dan in view of Sakurai further in view of McBrearty and

further in view of Pitts teaches all the limitations as stated above. However, it does not

clearly teach synchronization information indicative of whether or not contents of each

of files and directories that is indicated as an object to be copied, maintain consistency

between the network storage apparatus as the replication source and the network

storage apparatus as the replication destination and judges that the replicating

operation should be performed under a condition that said synchronization information

indicates consistency. On the other hand, DeKoning discloses a system using

synchronization information for replication of data from a local storage device to remote

storage devices to reach a coherency point (i.e., consistency state)(see col. 2, lines 10-

27, DeKoning). DeKoning is from the same field of endeavor of replicating data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teachings of the combination of Dan in view of

Sakurai further in view of McBrearty and further in view of Pitts with DeKoning's

teaching. A skilled artisan would have been motivated to incorporate the technique of

using synchronization information for replication of data from a local storage device to

remote storage devices to reach a coherency point (i.e., consistency state), as taught by

DeKoning (see col. 2, lines 10-27, DeKoning) into the method of Judging whether or not

to replicate data from the source storage device to the target device of the combination

of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts in order

to include in the system synchronization information indicative of whether or not

contents of each of files and directories that is indicated as an object to be copied,

maintain consistency between the network storage apparatus as the replication source

and the network storage apparatus as the replication destination and judges that the

replicating operation should be performed under a condition that said synchronization

information indicates consistency. The motivation for doing so would have been to

increase the efficiency of replicating system by determining the points that

synchronization occurs in order to reach to coherency (i.e., consistency point).

Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Dan et al., US Patent No. 6,223,206 B1 in view of Sakurai, US Patent No. 5,093,779,

further in view of McBrearty et al., US Publication No. 2002/0133681 A1, further in view

of Pitts, US Patent No. 6,205,475 B1 issued on Mar. 20, 2001, and further in view of

Saito et al., US Patent Publication No. 2004/0111441 A1 on Jun. 10, 2004.

The combination of Dan in view of Sakurai further in view of McBrearty and

further in view of Pitts teaches all the limitations as stated above. However, it does not

clearly disclose a consistency unit for maintaining consistency of the files and

directories that is indicated as an object to be copied, between the network storage

apparatus as the replication source and the network storage apparatus as the

replication destination. On the other hand, Saito discloses a consistency management

(i.e., unit) for maintaining the consistency between files and directories of a file system

by maintaining a distributed graph of replicas for each file between a network storage

devices including source and target nodes (see [0069], Saito). Saito is from the same

field of endeavor of replicating data. Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify the teachings of the

combination of Dan in view of Sakurai further in view of McBrearty and further in view of

Pitts with Saito's teaching. A skilled artisan would have been motivated to incorporate

the technique of a consistency management (i.e., unit) for maintaining the consistency

between files and directories of a file system by maintaining a distributed graph of

replicas for each file between a network storage devices including source and target

nodes, as taught by Saito (see [0069], Saito) into the teachings of the combination of

Dan in view of Sakurai further in view of McBrearty and further in view of Pitts in order to

include a consistency unit for maintaining consistency of the files and directories that is

indicated as an object to be copied, between the network storage apparatus as the

replication source and the network storage apparatus as the replication destination. The

motivation for doing so would have been to increase the efficiency of the system by

maintaining the structure of file system through replication from one storage to another

and decrease the inconsistency across the system.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dan et

al., US Patent No. 6,223,206 B1 in view of Sakurai, US Patent No. 5,093,779, further in

view of McBrearty et al., US Publication No. 2002/0133681 A1, further in view of Pitts,

US Patent No. 6,205,475 B1 issued on Mar. 20, 2001, and further in view of Choquier et al., US Patent No. 6,961,681 B1 issued on Nov. 1, 2005 (Choquier, hereafter).

The combination of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts teaches all the limitations as stated above. However, it does not clearly disclose a unit for holding master information indicating that the files and directories managed by the unified management directory are masters, wherein said judgment unit judges whether or not replication should be performed in accordance also with the master information. On the other hand, Choquier discloses a virtual application manager as a unit containing the master copy of files and directories; the system determines (i.e., judges) whether or not a replication should be initiated based on master copy of files (see col. 5, lines 41-62, Choquier). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of the combination of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts with Choquier's teaching. A skilled artisan would have been motivated to incorporate the technique of a virtual application manager as a unit containing the master copy of files and directories; the system determines (i.e., judges) whether or not a replication should be initiated based on master copy of files, as taught by Choquier (see col. 5, lines 41-62, Choquier) into the teachings of the combination of Dan in view of Sakurai further in view of McBrearty and further in view of Pitts in order to include a unit for holding master information indicating that the files and directories managed by the unified management directory are masters, wherein said judgment unit judges whether or not replication should be performed in accordance also with the

master information. The motivation for doing so would have been to increase the

efficiency of the system by updating and synchronizing the files and directories

according to the master copy.

Response to Arguments

Applicants' arguments with respect to claims 1, 4, 9 and 12 that prior art does not

teach the limitation of "collecting from said first network storage apparatus and from said

second network storage apparatus responses to the file access request and making the

collected responses into one response; and sending one response to the client" is moot

in view of new ground of rejection in view of **Dan et al., US Patent No. 6,223,206 B1.**

Points of Contacts

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to HARES JAMI whose telephone number is (571)270-

1291. The examiner can normally be reached on Mon to Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John E. Breene can be reached on 571-272-4107. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hares Jami/
Examiner
Art Unit 2162

/JEAN B. FLEURANTIN/
Primary Examiner, Art Unit 2162